

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1           1. (currently amended) An electromagnetic interference  
2 analysis method for analyzing the amount of electromagnetic  
3 interference arising in an LSI by means of performing a logic  
4 simulation, the method comprising:

5           an instantaneous current calculation step of calculating  
6           the amount of instantaneous electric current from  
7           event information, the information being produced  
8           when a change arises in a signal and including the  
9           instance name of each cell in which the change has  
10          arisen, the name of the signal, a time at which the  
11          change has arisen, and transition information;

12          a modeling step of modeling the instantaneous electric  
13          current according to a predetermined rule; and

14          an FFT processing step of subjecting to fast Fourier  
15          processing (hereinafter referred to as "FFT  
16          processing") the information concerning a change in  
17          electric current, the information being calculated  
18          through [[a]] the modeling step.

1           2. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step  
3 includes an averaging step of averaging the instantaneous  
4 current over a certain discrete width, and the FFT processing  
5 step includes a step of subjecting to FFT processing  
6 information concerning a change in current, the information  
7 being produced by the averaging step.

1           3. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1

3        wherein the modeling step includes a rectangular waveform  
4        modeling step of modeling the instantaneous current  
5        as a rectangular waveform whose height is calculated  
6        ~~for~~ from information for each event such that the  
7        area of the rectangular waveform becomes equal to  
8        the amount of electric current of each event  
9        and the FFT processing step includes a step of subjecting  
10       to FFT processing information concerning a change in  
11       current, the information being calculated in the  
12       rectangular waveform modeling step.

1       4. (original) The electromagnetic interference analysis  
2       method as defined in claim 1, wherein the modeling step  
3       includes a geometrically-similar rectangular waveform modeling  
4       step of modeling the instantaneous current as a geometrically-  
5       similar rectangular waveform whose height and width are  
6       calculated such that the area of the rectangular waveform  
7       becomes equal to the amount of electric current of each event,  
8       and the FFT processing step includes a step of subjecting to  
9       FFT processing information concerning a change in current, the  
10       information being calculated in the geometrically-similar  
11       rectangular waveform modeling step.

1       5. (currently amended) The electromagnetic interference  
2       analysis method as defined in claim 1, wherein the modeling  
3       step includes a rectangular waveform modeling step of  
4       calculating the instantaneous electric current ~~for~~ from each  
5       event information, and a step of modeling the instantaneous  
6       current as a rectangular waveform through use of the amount of  
7       electric current and a table representing the relationship  
8       between the width and height of a rectangular waveform, to  
9       thereby subject to FFT processing the information concerning a  
10       change in electric current calculated in the rectangular  
11       waveform modeling step.

1           6. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a step of calculating the instantaneous electric  
4 current ~~for~~ from information for each event, and a rectangular  
5 waveform modeling step of modeling the instantaneous current  
6 as a rectangular waveform through use of a slew in input  
7 waveform and a table representing the relationship between the  
8 width and height of a rectangular waveform, to thereby subject  
9 to FFT processing the information concerning a change in  
10 electric current calculated in the rectangular waveform  
11 modeling step.

1           7. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a step of calculating the instantaneous electric  
4 current ~~for~~ from information for each event, and a rectangular  
5 waveform modeling step of modeling the instantaneous current  
6 as a rectangular waveform through use of an output load  
7 capacitance and a table representing the relationship between  
8 the width and height of a rectangular waveform, to thereby  
9 subject to FFT processing the information concerning a change  
10 in electric current calculated in the rectangular waveform  
11 modeling step.

1           8. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a step of calculating a drop in voltage from the  
4 amount of electric current flowing in each cell and the  
5 resistance of a power line and correcting the amount of  
6 instantaneous electric current of each cell for each event, on  
7 the basis of the relationship between the drop in voltage and  
8 the amount of instantaneous electric current.

1           9. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step  
3 includes a step of calculating a drop in voltage from the  
4 amount of electric current flowing in each cell, the  
5 resistance of a power line, and the capacitance of an on-chip  
6 capacitor, and correcting the amount of instantaneous electric  
7 current of each cell for each event, on the basis of the  
8 relationship between the drop in voltage and the amount of  
9 instantaneous electric current.

1           10. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step  
3 includes a step of transiently analyzing a power RC of each  
4 cell and a cell power source, accurately calculating a drop in  
5 voltage, and a correction step of correcting the amount of  
6 instantaneous electric current of each cell for each event, on  
7 the basis of the relationship between the drop in voltage and  
8 the amount of instantaneous electric current.

1           11. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a triangular waveform modeling step of modeling  
4 the instantaneous current as a triangular waveform which has a  
5 given width and whose height is calculated ~~for~~ from each event  
6 information such that the amount of instantaneous electric  
7 current becomes equal to the area of the triangular waveform,  
8 and the FFT processing step includes a step of subjecting to  
9 FFT processing information concerning a change in current, the  
10 information being calculated in the triangular waveform  
11 modeling step.

1           12. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step

3 includes a multi-order-function waveform modeling step of  
4 modeling the instantaneous current as a multi-order function  
5 waveform, and the FFT processing step includes a step of  
6 subjecting to FFT processing information concerning a change  
7 in current, the information being calculated in the multi-  
8 order-function waveform modeling step.

1 13. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step  
3 includes an exponential function waveform modeling step of  
4 modeling the instantaneous current as an exponential-function  
5 waveform, and the FFT processing step includes a step of  
6 subjecting to FFT processing information concerning a change  
7 in current, the information being calculated in the  
8 exponential-function waveform modeling step.

1 14. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step  
3 includes a step of modeling the amount of instantaneous  
4 electric current while separating the same into a short  
5 circuit electric current component and a charge current  
6 component.

1 15. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a calculation step of calculating the height of  
4 a rectangular waveform from a library in which peak currents  
5 of cells are characterized according to the type of cell, and  
6 a rectangular waveform modeling step of modeling the amount of  
7 instantaneous electric current as a rectangular waveform, the  
8 peak current calculated in the calculation step being taken as  
9 the height of the rectangular waveform and the area of the  
10 ~~triangular~~ rectangular waveform being equal to the amount of  
11 electric current of each event, and the FFT processing step

12 includes a step of subjecting to FFT processing information  
13 concerning a change in current, the information being  
14 calculated in the rectangular waveform modeling step.

1 16. (original) The electromagnetic interference analysis  
2 method as defined in claim 15, wherein the calculation step  
3 includes a step of calculating a peak current for each cell  
4 from information concerning a slew in the cell, by reference  
5 to a library in which the relationship between a slew in input  
6 waveform and a peak current is characterized in the form of a  
7 table according to the type of cell.

8 17. (original) The electromagnetic interference analysis  
9 method as defined in claim 15, wherein the calculation step  
10 includes a step of calculating a peak current for each cell  
11 from information concerning a load capacitance of a cell, by  
12 reference to a library in which the relationship between a  
13 load capacitance and a peak current is characterized in the  
14 form of a table according to the type of cell.

15 18. (original) The electromagnetic interference analysis  
16 method as defined in claim 15, wherein the calculation step  
17 includes a step of setting a plurality of peak currents for a  
18 composite cell and calculating the heights of a plurality of  
19 rectangular waveforms through use of a characterized library,  
20 and the rectangular waveform modeling step corresponds to a  
21 step of modeling the amount of electric current into a  
22 plurality of rectangular waveforms.

23 19. (original) The electromagnetic interference analysis  
24 method as defined in claim 15, wherein the calculation step  
25 includes a step of setting a plurality of peak currents for  
26 each of the rise and fall of a flip-flop (FF) cell and  
27 calculating the heights of a plurality of rectangular

28 waveforms through use of a characterized library, and the  
29 rectangular waveform modeling step corresponds to a step of  
30 modeling the amount of electric current into a plurality of  
31 rectangular waveforms.

32 20. (original) The electromagnetic interference analysis  
33 method as defined in claim 15 , wherein the calculation step  
34 includes a step of calculating the height of a rectangular  
35 waveform through use of a library in which peak currents are  
36 characterized, in consideration of the state of an input  
37 signal.

38 21. (original) The electromagnetic interference analysis  
39 method as defined in claim 15, wherein the modeling step  
40 includes a step of calculating a drop in voltage from the  
41 amount of electric current determined according to the type of  
42 cell and from the resistance of a power line; and a correction  
43 step of characterizing, for each cell, the relationship  
44 between a drop in voltage and the amount of instantaneous  
45 electric current in the form of a table, to thereby correct  
46 the amount of instantaneous electric current for each event of  
47 the cell.

1 22. (original) The electromagnetic interference analysis  
2 method as defined in claim 15, wherein the modeling step  
3 includes a step of  
4 calculating a drop in voltage from the amount of electric  
5 current determined according to the type of cell,  
6 the resistance of a power line, and the capacitance  
7 of an on-chip capacitor; and  
8 a correction step of characterizing, for each cell, the  
9 relationship between a drop in voltage and the  
10 amount of instantaneous electric current in the form  
11 of a table, to thereby correct the amount of

12                    instantaneous electric current for each event of the  
13                    cell.

1            23. (original) The electromagnetic interference analysis  
2 method as defined in Claim 10, wherein the correction step  
3 includes a step of iterating several times calculation of a  
4 drop in voltage and correction of a current waveform.

1            24. (original) The electromagnetic interference analysis  
2 method as defined in claim 15, wherein the calculation step  
3 includes a step of modeling the amount of instantaneous  
4 electric current while separating the same into a short  
5 circuit electric current component and a charge current  
6 component.

1            25. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a triangular waveform modeling step of modeling  
4 the instantaneous current as a triangular waveform whose width  
5 is calculated ~~for~~ from each event information in consideration  
6 of slew information (i.e., an output slew) for an output  
7 terminal of a cell for each event information such that the  
8 area of the triangular waveform becomes equal to the amount of  
9 electric current of each event, the height of the triangular  
10 waveform being calculated on the basis of the width, and the  
11 FFT processing step includes a step of subjecting to FFT  
12 processing information concerning a change in current, the  
13 information being calculated in the triangular waveform  
14 modeling step.

1            26. (original) The electromagnetic interference analysis  
2 method as defined in claim 1, wherein the modeling step  
3 includes a triangular height calculation step of calculating  
4 the height of a triangular waveform such that the area of the



5 triangular waveform becomes equal to the amount of electric  
6 current of each event, by means of multiplying the amount of  
7 instantaneous electric current by a coefficient corresponding  
8 to the state of an event of a cell, in consideration of  
9 whether the event of the cell is in a rising state or a  
10 falling state.

1 27. (currently amended) The electromagnetic interference  
2 analysis method as defined in claim 1, wherein the modeling  
3 step includes a step of calculating the amount of  
4 instantaneous electric current ~~for~~ from each event information  
5 in the case of a composite cell; and a triangular waveform  
6 modeling step of modeling the amount of instantaneous electric  
7 current as a plurality of triangular waveforms which are equal  
8 in number to the stages provided in the composite cell,  
9 through use of a table representing the relationship between  
10 the width and height of a triangular waveform; and the FFT  
11 processing step includes a step of subjecting to FFT  
12 processing information concerning a change in current, the  
13 information being calculated in the triangular waveform  
14 modeling step.

1 28. (original) An electromagnetic interference analysis  
2 system for analyzing the amount of electromagnetic  
3 interference arising in an LSI by means of performing a logic  
4 simulation,  
5 the system comprising:  
6 a logic simulator;  
7 computation means which is connected to the logic  
8 simulator and calculates the amount of instantaneous  
9 electric current from event information, the  
10 information being produced when a change arises in a  
11 signal and including the instance name of each cell  
12 in which the change has arisen, the name of the

13                    signal, a time at which the change has arisen, and  
14                    transition information;  
15           modeling means for modeling the instantaneous electric  
16           current according to a predetermined rule; and fast  
17           Fourier (FFT) conversion means for subjecting to  
18           fast Fourier processing the information concerning a  
19           change in electric current, the information being  
20           calculated through [[a]] the modeling means~~step~~,  
21           thereby analyzing the amount of electromagnetic  
22           interference arising in an LSI on the basis of a  
23           signal output from the FFT conversion means.

1           29. (new) The method of claim 1, further comprising the  
2           step of providing a gate level logic simulation.

1           30. (new) The method of claim 28, further comprising a  
2           gate level logic simulator.